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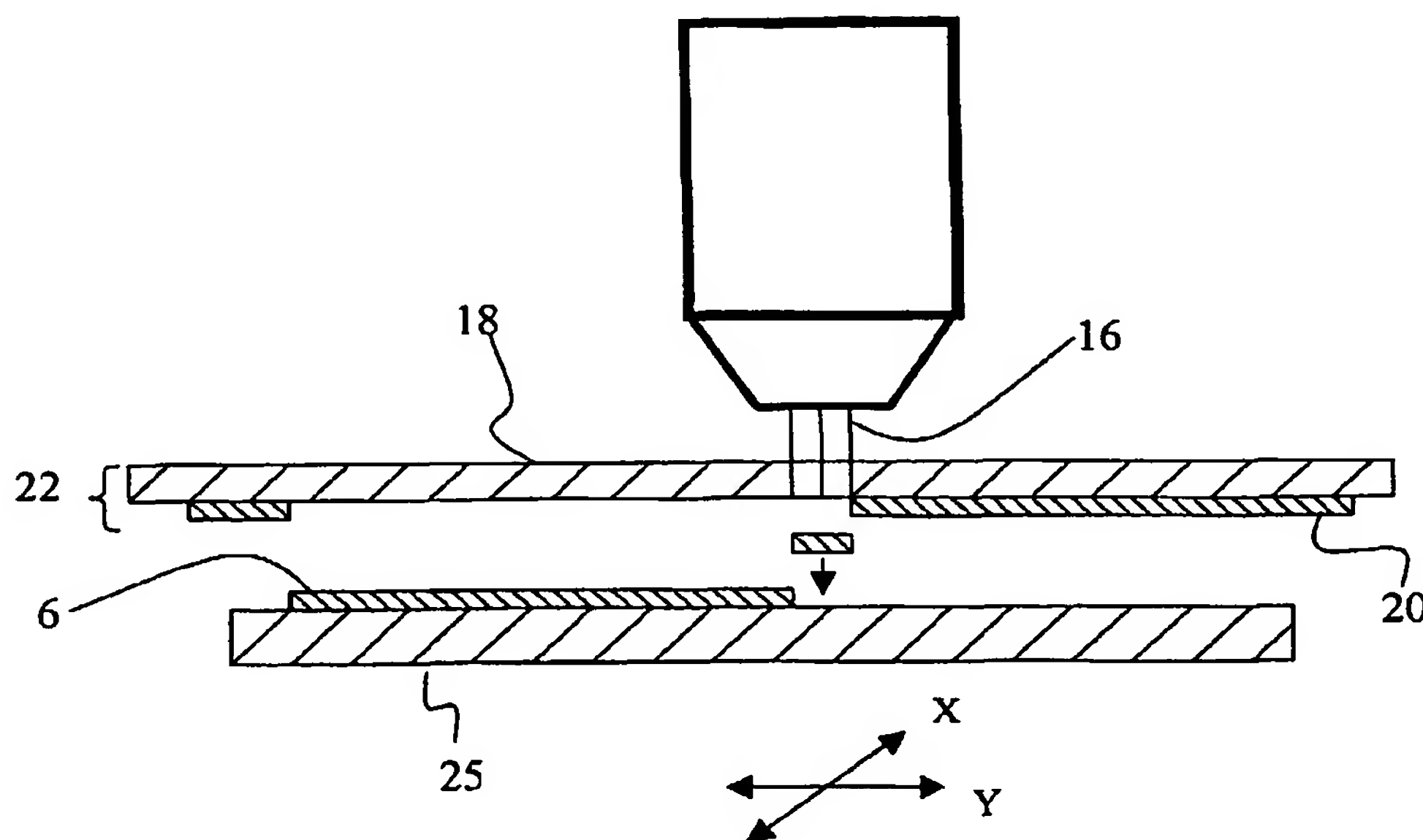
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(54) Title: METHODS FOR PROVIDING THIN HYDROGEN SEPARATION MEMBRANES AND ASSOCIATED USES



(57) Abstract: This present disclosure is generally related to providing thin hydrogen separation membranes (6) coated on porous substrates (25) that are useful in membranes steam reformers and methods for making same. These reformers can be integrated with proton exchange membrane (PEM) fuel cells to form power systems. The membrane may be deposited via a direct writing technique, where laser beam (16) strikes ribbon (22) passing through optically transparent backing (18), causing evaporation of the liquid/carrier component of ink solution (20), which propels material to be deposited (metal/alloys) towards substrate (25).



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